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FERROMAGNETIC DIELECTRIC SUBSTANCE(U) FOREIGN

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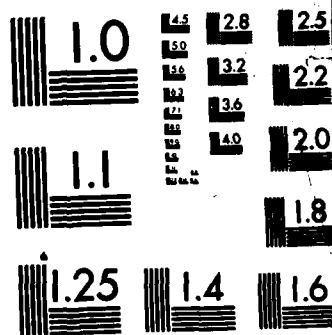
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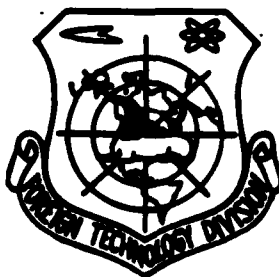


FERROMAGNETIC DIELECTRIC SUBSTANCE

by

Yu. G. Borzyak, N.N. Oster-Volkov, et al.

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EDITED TRANSLATION

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MICROFICHE NR: FTD-85-C-001275

FERROMAGNETIC DIELECTRIC SUBSTANCE

By: Yu. G. Borzyak, N.N. Oster-Volkov, et al.

English pages: 2

Source: USSR Patent Nr. 169706, 17 March 1965,
pp. 1-2

Country of origin: USSR
Translated by: Robert D. Hill
Requester: FTD/TQTA
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U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

*ye initially, after vowels, and after ъ, ы; e elsewhere.
When written as ё in Russian, transliterate as yě or ě.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh ⁻¹
cos	cos	ch	cosh	arc ch	cosh ⁻¹
tg	tan	th	tanh	arc th	tanh ⁻¹
ctg	cot	cth	coth	arc cth	coth ⁻¹
sec	sec	sch	sech	arc sch	sech ⁻¹
cosec	csc	csch	csch	arc csch	csch ⁻¹

Russian English

rot curl
lg log

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

FERROMAGNETIC DIELECTRIC SUBSTANCE

Authors of the Invention: Yu. G. Borzyak, N. N. Oster-Volkov,
A. I. Rolik, and A. I. Yakovlev

A large variety of ferromagnetics and magnetodielectrics has been widely used in high-frequency equipment, where they occupy a leading position. The use of ferromagnetics in low-frequency equipment of powerful currents (for electrical machine building) is limited only by metallic ferromagnetics, for example, silicon steels, since the ferromagnetic dielectrics, together with good magnetic and dielectric qualities must have good strength characteristics and high heat resistance.

The known use of the mixture of magnetically soft iron powder with a polymer thermoreactive compound as a binder is by itself assumed as a basis of the proposed ferromagnetic dielectric substance. To obtain a substance which possesses high heat resistance, as the indicated compound it is proposed to use the compound of furan epoxy resin with an addition of a hardner (hexamethylene diamine or polyethylene polyamine) and a fiberglass admixture.

The weight ratio of the ingredients making up the composition of the substance is determined by the following limits: iron powder with a dimension of 30-50 μ - 150-200 parts, furan epoxy resin - 100 parts, hardener (hexamethylene diamine or polyethylene polyamine - 14-16 parts, and admixtures of glass fiber - 1-1.5 parts. The iron powder is carefully mixed with the resin and the admixture in the portions indicated for 10-15 minutes up to complete wettability of all particles of the powder, after which the hardener is introduced, and the entire substance is again mixed for 5-10 minutes until complete uniformity is obtained. The preparatory mixture is a casting composition for obtaining final articles of necessary shapes.

The casting molds are aged for 24-28 hours at normal temperature

and then undergo hot hardening according to the following conditions: at 80°C - 2-4 hours, at 100-120°C - 4-6 hours, at 140-160°C - 4-6 hours, and at 180°C - 2 hours. To obtain the physicomechanical properties of the articles, it is necessary to give an additional holding at 140-160°C for 5-6 hours.

The viability of the casting composition of the substance with the hardener hexamethylene diamine is 30-60 minutes and with the hardener polyethylene polyamine, 10-12 hours.

Claim of the Invention

The claim of the invention is a ferromagnetic dielectric substance on the basis of a magnetically soft iron powder and polymer thermoreactive compound as the binder, which differs in that for the purpose of ensuring high heat resistance and mechanical strength, the compound indicated consists of a furan epoxy resin with the addition of a hardener (hexamethylene diamine or polyethylene polyamine) and a fiberglass admixture.

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